

REMARKS

Applicant has amended the claim 6 as part of this Request for Continued Examination. Applicant respectfully submits that these amendments to the claims are supported by the application as originally filed and do not contain any new matter. Still further, Applicant respectfully submits that these claims would not be properly rejected based upon the art of record for the reasons set forth below.

The Examiner has rejected the claims 6 - 9 under 35 USC 102 as being anticipated by Clift et al. stating that Clift et al. discloses all of the present invention and essentially in the Examiner's Response to Arguments the Examiner suggests that a "register array" is the equivalent to a "stack".

In reply to this rejection, Applicant respectfully submits that Applicant's invention as claimed in claims 6 - 9 are patentably distinct from Clift et al. In particular, Clift et al. requires that each entry of the RAT primary/shadow array 110/112 corresponds to a predetermined logical register (see Figures 2 and 4 and column 5, lines 11-25 and column 11, lines 16-22 of Clift et al.) and accordingly, Applicant respectfully submits that Clift et al. is a register machine. Of course, a register machine can emulate a stack machine. Clift et al., however, do not describe any stack management system, and cannot, it is respectfully submitted therefore, anticipate claims 6 - 9.

In addition, Applicant respectfully submits that Applicant's invention as disclosed in the specification and defined by the claims is a look-ahead stack management system which is patentably distinct from traditional systems. Namely, Applicant respectfully submits that in the look-ahead stack management system of Applicant's invention the specified entry of the look-ahead mapping means (or the advanced mapping file (AMF 3a)) is always to correspond to the top of the stack (see page 14, line 23 – page 16, line 13 and Figure 3 of Applicant's application), and each time the stack is to grow, contents of entries of the look-ahead mapping means are to be shifted by the amount of the stack growth (see page 24, lines 8-21). Applicant respectfully submits that this type of shift is implied in the fourth paragraph of the claims.

In contrast to Applicant's system described above, Applicant respectfully submits that the traditional systems employ the circular buffer technique, which requires two pointers to indicate the top and the bottom. As a result, the entry of the look-ahead mapping means that

is indicated by the pointer to the top is to correspond to the top of the stack and no shift is to be conducted on the look-ahead mapping means.

For the Examiner to better understand Applicant's invention and the traditional systems, set forth below is a description of how the computer system described in the present application deals with stack instructions. On page 8, line 11 – page 11, line 7 of Applicant's specification, how stack instructions are converted into instructions for the stack mode is illustrated (As for the instruction format, see page 7, line 10 – page 8, line 10 of the specification). Specifically, five stack instructions { LOAD <4>; DUP; LOAD <1>; MUL; SWAP } are converted into Instruction_1, and five stack instructions { LOAD <2>; SWAP; DIV; ADD; STORE <5> } are converted into Instruction_2. As shown on page 11, the contents of the Op (operations) and SM (state modification) fields of Instruction_1 and Instruction_2 are as follows:

Instruction_1

Op{ load f1, <4>; add f2, f1, 0; load f3, <1>; mul f4, f2, f3 }
SM{ +2: f4, f1 }

Instruction_2

Op{ load f1, <2>; div f2, f1, s0; add f3, s1, f2; store <5>, f3 }
SM{ -2: }

(f1 - f4 represent addresses of the data-file entries to be allocated to hold result data).

The content of the state modification field of Instruction_1, namely SM{ +2: f4, f1 }, implies that the stack is to be grown by two elements, which are to correspond to f4 and f1. And, the content of the state modification field of Instruction_2, namely SM{ -2: }, implies that the stack is to be reduced by two elements.

In addition to the above, referring to page 28, line 1 – page 32, line 25 of the specification, an example action of processing two instructions, namely Instruction_1 and Instruction_2, is described.

In the example action, when the computer system is in such a state as shown in Figure 8, Instruction_1 is issued and the advanced mapping file (AMF 3a) is so modified that p26 and p51, replacing f1 and f4, are respectively entered into the entries of address 0 and 1, and for the parts below, the contents of the AMF entries are shifted down by the amount of the stack growth (2 entries). In other words, the contents of the AMF entries of address 0, 1, ...

shown in Figure 8 are moved into the AMF entries of address 2, 3, ..., respectively. The state of the computer system right after the issuance of Instruction_1 is shown in Figure 9.

In this example action in the next cycle, Instruction_2 is issued. Since only a negative growth of the stack (-2) is indicated in the SM field, the contents of the AMF entries are shifted by this amount. In other words, the contents of the AMF entries of address 2, 3, ... shown in Figure 9 are moved into the AMF entries of address 0, 1, ..., respectively. The state of the computer system right after the issuance of Instruction_2 is shown in Figure 10.

From the illustrations above, it should be apparent that in the stack mode of the system disclosed in the present application, the AMF 3a is to be manipulated in a particular manner such that the entry of address 0 of the AMF 3a is always to correspond to the top of the stack, and the entry of address n of the AMF 3a is to correspond to the (n+1)th element of the stack.

In contrast to the stack management system of Applicant's invention described above, the traditional systems employ the circular buffer technique, which requires two pointers to indicate or point to the top and the bottom.

In regard to claims 6 - 9, for the Examiner's ease of understanding, the following should be noted, which were basically included in the REQUEST FOR RECONSIDERATION WITH AMENDMENT filed on March 6, 2009.

In the first place, it should be noted that the data file (DF 6) and the advanced mapping file (AMF 3a) noted in the specification correspond respectively to the "data storing means" and "look-ahead mapping means" in claims 6 - 9.

As to claim 6, the phrase "for each entry of said look-ahead mapping means that is to hold an entry address in said data storing means allocated to an operand stack element" in lines 9-10 is inserted in order to exclude entries that are to be below the bottom, and "the entry" in line 11 refers to "each entry" in line 9.

As to claim 7, the phrase "for each entry of said look-ahead mapping means holding an entry address in said data storing means allocated to an operand stack element" in lines 8-9 is inserted in order to exclude entries that are below the bottom right before the modification. The phrase "if the entry of said look-ahead mapping means is to hold an entry address in said data storing means allocated to an operand stack element" in lines 9-11 is inserted in order to exclude cases where "the entry", which refers to "each entry" in line 8, is to fall below the bottom right after the modification. The phrase "whose value is one of: held and to be held in

the entry of said data storing means indicated by the address held in the entry of said look-ahead mapping means" in lines 12-13 qualifies "the operand stack element" in lines 11-12, and the phrase "indicated by the address held in the entry of said look-ahead mapping means" in line 13 qualifies "the entry of said data storing means" in lines 12-13. And, "the entry" in line 13 also refers to "each entry" in line 8. Hence, "the number of operand stack elements over the operand stack element whose ..." is to be unchanged. Since the "look-ahead mapping means" indicates the look-ahead state of the system, the entry of the data storing means indicated by an address held in the look-ahead mapping means may or may not hold a value at the time of the modification. As a result, Applicant has adopted the expression of "one of: held and to be held".

As to claims 8 and 9 respectively, Applicant respectfully submits that these are similar to claims 6 and 7 except that "entry/entries" is changed to "register/registers" and accordingly "(entry) address" is changed to "(register) number".

In view of the above, Applicant respectfully submits that Applicant's invention provides certain advantages. In particular, the circuit for making a modification on a look-ahead mapping means can be streamlined by adopting the look-ahead stack management system of Applicant's invention as claimed by claims 6 - 9. Applicant respectfully submits that such an advantage is not achieved and cannot be achieved with a traditional stack management system equipped with a circular buffer. Still further, the look-ahead mapping means of Applicant's invention can have a non power of 2 number of entries for stack management; whereas a system with a circular buffer cannot.

In view of the above, Applicant respectfully submits that the claims 6 - 9 are not anticipated by Clift et al.

Applicant further respectfully and retroactively requests a three (3) month extension of time to file this Request for Continued Examination and to enter this Amendment and respectfully requests that the extension fee in the amount of \$555.00 (Fee Code: 2253) be charged to QUINN EMANUEL DEPOSIT ACCOUNT NO. 50-4367.

Please charge any additional costs incurred by or in order to implement this amendment or required by any requests for extensions of time to QUINN EMANUEL DEPOSIT ACCOUNT NO. 50-4367.

Respectfully submitted,

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